

CLAIMS

What is claimed is:

1 1. A method for providing inheritable thread-local storage from a parent thread to a
2 child thread, the method comprising:

3 for each thread-local variable, mapping each thread to a value; and

4 when a parent thread creates a child thread, automatically iterating over the parent
5 thread's values to create the child thread's initial values.

1 2. The method of Claim 1, wherein the step of mapping comprises maintaining a
2 map, associated with each thread object, that maps each thread-local variable to a value; and
3 the step of iterating comprises iterating over the map.

1 3. The method of Claim 1, wherein the step of mapping comprises maintaining a
2 map, associated with each thread-local variable, that maps each thread to a value, and wherein
3 for each thread a linked list is maintained, the linked list linking inheritable thread-local
4 values associated with the thread; and wherein the step of iterating comprises iterating over
5 the linked list.

1 4. The method of Claim 2, wherein the map comprises a hash table.

1 5. The method of Claim 3, wherein the map comprises a hash table.

1 6. The method of Claim 1, wherein a child thread's initial value is a copy of a
2 corresponding parent thread's value.

1 7. The method of Claim 1, wherein a child thread's value is a predetermined function
2 of a corresponding parent thread's value.

1 8. The method of Claim 4, wherein the step of mapping further comprises creating a
2 separate hash table for inheritable values and a separate hash table for non-inheritable values.

1 9. The method of Claim 5, wherein the step of mapping further comprises creating a
2 hash table having both inheritable values and non-inheritable values, wherein each value has
3 a flag to identify whether each value in the table is an inheritable or non-inheritable value.

1 10. The method of Claim 2, wherein the method is implemented in a Java
2 programming language as a class.

1 11. The method of Claim 3, wherein the method is implemented in a Java
2 programming language as a class.

1 12. A method for providing automatic value inheritance when a parent thread creates
2 a child thread, the method comprising:
3 associating, for each thread object, each thread-local variable with a value; and
4 automatically iterating over the thread-local values to create a child value
5 corresponding to each inheritable parent value, when a child is created.

1 13. The method of Claim 12, wherein the child value is a copy of the corresponding
2 parent value.

1 14. The method of Claim 12, wherein the child value is a function of the
2 corresponding parent value.

1 15. The method of Claim 12, wherein the step of associating comprises creating a
2 separate hash table for inheritable values and a separate hash table for non-inheritable values.

1 16. The method of Claim 12, wherein the step of associating comprises creating a
2 hash table having both inheritable values and non-inheritable values, wherein each value has
3 a flag to identify whether each value in the table is an inheritable or non-inheritable value.

1 17. The method of Claim 12, wherein the method is implemented in a Java
2 programming language as a class.

1 18. A method for providing automatic value inheritance when a parent thread creates
2 a child thread, the method comprising:

3 associating, for each thread-local variable, each thread to a value, wherein for each
4 thread a linked list is maintained, the linked list linking inheritable thread-local values
5 associated with the thread; and

6 automatically iterating over the linked list to create a child value corresponding to
7 each inheritable parent value when a child is created.

1 19. The method of Claim 18, wherein the child value is a copy of the corresponding
2 parent value.

1 20. The method of Claim 18, wherein the child value is a function of the
2 corresponding parent value.

1 21. The method of Claim 18, wherein the method is implemented in a Java
2 programming language as a class.

1 22. A computer readable medium including computer program code for providing
2 automatic value inheritance when a parent thread creates a child thread, the parent thread
3 having at least one thread-local object value, the computer readable medium comprising:
4 computer program code for associating, for each thread object, each thread-local
5 variable with a value ; and

6 computer program code for automatically iterating over the thread-local values to
7 create a child value corresponding to each inheritable parent value, when a child is created.

1 23. The medium of Claim 22, wherein the child value is a copy of the corresponding
2 parent value.

1 24. The medium of Claim 22, wherein the child value is a function of the
2 corresponding parent value.

1 25. The medium of Claim 22, wherein the computer code for associating comprises
2 code for creating a separate hash table for inheritable values and a separate hash table for non-
3 inheritable values.

1 26. The medium of Claim 22, wherein the computer code for associating comprises
2 computer code for creating a hash table having both inheritable values and non-inheritable
3 values, wherein each value has a flag to identify whether each value in the table is an
4 inheritable or non-inheritable value.

1 27. The medium of Claim 22, wherein the computer program code is implemented in
2 a Java programming language as a class.

1 28. A computer readable medium including computer program code for providing
2 automatic value inheritance when a parent thread creates a child thread, the parent thread
3 referencing at least one thread local variable, the computer readable medium comprising:

4 computer program code for associating, for each thread-local variable, each thread to a
5 value, wherein for each thread a linked list is maintained, the linked list linking inheritable
6 thread local values associated with the thread; and

7 computer program code for automatically iterating over the linked list to create a child
8 value corresponding to each inheritable parent value, when a child is created.

1 29. The medium of Claim 28, wherein the child value is a copy of the corresponding
2 parent value.

1 30. The medium of Claim 28, wherein the child value is a function of the
2 corresponding parent value.

1 31. The medium of Claim 28, wherein the computer program code is implemented in
2 a Java programming language as a class.

32. A computer system providing automatic inheritance of thread-local values of a parent thread to a child thread, the computer system comprising:

- a processor; and
- a computer program operating on the processor that creates child thread-local values for use by a child thread, wherein the child thread-local values are a function of the parent's thread-local values.

33. A method for providing automatic inheritance of parent thread-local values to a child thread upon child thread creation, wherein a parent thread is associated with the parent's thread-local values, the method comprising:

- determining the parent's inheritable thread-local values; and
- automatically initializing the child's thread-local values corresponding to the parent's inheritable thread-local values, upon child creation, based on a predetermined child value method.